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PREVALENCE OF URINARY INCONTINENCE AMONG POSTMENOPAUSAL WOMEN: A CROSS-SECTIONAL STUDY

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Article Info

Abstract

Background:
Menopause marks the end of menstruation, which is characterized by changes in hormonal levels that significantly affect women's urogenital health. When estrogen levels drop, the pelvic muscles and all the surrounding tissues become weaker, which increases the risk of urinary incontinence in women.

Objective:
The purpose of this study was to determine the prevalence of urinary incontinence among postmenopausal women.

Methodology:
A cross-sectional study was conducted among 153 female participants aged 45 to 85 years in Karachi using a non-probability convenience sampling technique. Data were collected through structured questionnaires, including the Incontinence Severity Index (ISI). Informed consent was obtained from all participants prior to data collection, and ethical considerations were strictly maintained. Statistical analysis was performed using SPSS version 26.The Chi-square test was performed to assess the association between menopause and urinary incontinence.

Result:
A total of 153 postmenopausal women, 83% were between the ages of 45 and 55, 68.6% went through menopause between the ages of 40 and 45 and 94.8% were married. 32.7% of subjects had mild incontinence, while the majority (58.8%) had no incontinence. Age and incontinence severity were shown to be significantly associated ($p < 0.001$), with older women more likely to have more severe urine incontinence.

Conclusion:
Postmenopausal women frequently experience mild episodes of urinary incontinence. Marital status was not significantly associated with the severity of incontinence, whereas age showed a significant correlation. Improving the quality of life of postmenopausal women with urinary incontinence requires early detection, patient education, and the implementation of preventive measures.

Keywords: *Urinary incontinence, Menopause, Postmenopause, Urge Urinary Incontinence , Stress Urinary Incontinence, Nocturia*

INTRODUCTION

Menopause represents a significant physiological milestone in a women's reproductive life. The permanent cessation of menstrual cycles following the loss of ovarian follicular activity is termed as menopause. The period between the onset of ovarian senescence and its full installation is known as the climacteric phase [1]. Pre-menopause, peri-menopause, and post- menopause are all included in the menopausal transition, which is characterized by shifts in hormonal and menstrual cycles. Perimenopause may begin several years before menopause. Perimenopause is characterized by either no menstruation for the previous three to eleven months (late) or menstruation for the previous three months but diminishing predictability between menses (early). Post-menopause refers to the period thereafter. Premature menopause is the term used to describe menopause that occurs in women before the age of 40. Menopause typically occurs between the ages of 44 and 55 worldwide [2]. Women frequently experience urinary incontinence (UI). It is describe as any involuntary loss of urine. Approximately 10% of women with incontinence lose pee daily. As people age, UI becomes more common and more severe [3]. Urinary incontinence is divided into three types. Stress urinary incontinence [SUI], urgency urinary incontinence [UUI], and mixed urinary incontinence [MUI]. from which stress incontinence is most common in women [4]. The International Urogynecological Association and International Continence Society joint report defines stress UI as "involuntary leakage from the urethra synchronous with effort or physical exertion, or on sneezing or coughing." Urgency UI is defined as "complaint of involuntary loss of urine associated with urgency," which is usually explained by overactive bladder (OAB) syndrome. Mixed UI is defined as "complaint of involuntary loss of urine associated with urgency and also with effort or physical exertion or on sneezing or coughing" [5]. Menopause-related endocrine changes aggravate this condition, which is not only a result of aging. The health and structural integrity of urogenital tissues, such as the bladder, urethra, and pelvic floor muscles, depend heavily on estrogen [6]. Maintaining continence also depend on the pelvic floor's function in supporting the bladder and urethra and enabling appropriate abdominal pressure transmission to the proximal urethra. The coordination between the bladder, urethra, sphincter, and pelvic floor, which is made possible by an undamaged neural system, is essential to their proper operation. When nerve damage or direct mechanical trauma to the pelvic organs disrupts this interaction, incontinence results. Advancing age, increased parity, vaginal delivery, obesity, and menopause are associated with an increased risk [7]. Several difficulties, including urinary incontinence, overactive bladder, vaginal dryness, dysuria, urinary tract infections, dyspareunia, and others, are brought on by the drop in estrogen levels throughout menopause [8]. Although UI is a preventable and treatable problem, it significantly affects women's health because of its prevalence. According to reports, it affects around 200 million adults worldwide, with a prevalence ranging from 5.0 to 69.0% [9]. In Europe, the prevalence of urine incontinence in female patients was identified which is 23% in Spain, 42% in the United Kingdom, 41% in Germany, and 44% in France [10]. The prevalence of any UI grew from 2001–2002, 11.5% [11]. The risk factors for urine incontinence also differ by gender. In women, pregnancy, vaginal delivery, parity, menopause, and obesity are key causes [12]. While it is not a life-threatening disease, it hurts the quality of life (QOL), and women do not always seek medical help or advice for this condition [13]. UI can cause significant physical discomfort and psychological suffering, such as social isolation and depression, leading to a deterioration in the quality of life (QOL) for women and imposing substantial social and

economic consequences. Every year, the United States spends more than $12 billion on nursing care and SUI therapy for women [14]. Therefore, this study aims to assess the prevalence of urinary incontinence among postmenopausal women, as it is a common yet underreported condition that significantly affects quality of life and requires timely identification and management.

METHODOLOGY:

This cross-sectional study was conducted in a community-based setting targeting postmenopausal women aged 45–85 years, focusing on improving women's health status. The study was carried out over a period of 6 months. A cross-sectional study design was used, allowing the examination of different groups at one point in time, in accordance with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines [15]. A non-probability convenience sampling technique was applied. The study population consisted of women aged 45–85 years. The sample size was calculated using OpenEpi software with a 5% margin of error and a 95% confidence interval, resulting in a minimum sample size of 153 participants [16]. Inclusion criteria included women aged 45–85 years, ability to provide informed consent, no menstruation, and ability to speak and understand [17], while exclusion criteria included women under 40 years of age, incomplete questionnaires, pregnancy at the time of study, and medical conditions suspected to impair bladder function [18]. The dependent variable was urinary incontinence, while independent variables included age, health conditions, and sedentary lifestyle factors. Data were collected from women residing in homes and communities using a structured questionnaire after obtaining informed consent. Urinary incontinence and its effect on quality of life were assessed using the Incontinence Severity Index (ISI), which classifies severity into mild (scores 1–2), moderate (scores 3–6), severe (scores 8–9), and very severe (score 12) [19]. The ISI demonstrated good validity and reliability with Cronbach's alpha ($\alpha = 0.773$) and intra-class correlation coefficient (ICC = 0.899) [20]. Data were analysed using SPSS version 26, and descriptive statistics were used to determine the prevalence of urinary incontinence, with p-values < 0.05 considered statistically significant. Ethical approval was obtained from the IREB (Indus Review Ethical Committee), and written informed consent was taken from all participants. Confidentiality and anonymity were ensured using coded data, and the study was conducted in accordance with the Declaration of Helsinki [21].

RESULT: A total of 153 postmenopausal women were included in the study. Most participants (83.0%) were aged 45–55 years, followed by 15.0% aged 56–65 years, while only 0.7% and 1.3% were aged 66–75 and 76–85 years, respectively. The majority of women were married (94.8%), with small proportions being single (1.3%), divorced (1.3%), or widowed (2.6%). Regarding age at menopause, most participants (68.8%) experienced menopause between 40 and 45 years, followed by 26.8% between 46 and 50 years, and 4.6% between 51 and 55 years**.**

Table 1. Socio-Demographic and Menopausal Characteristics of Participants (n = 153)

variables		Frequency	Percent
Age	**45–55**	**127**	**83.0**
	56–65	**23**	**15.0**
	66–75	**1**	**0.7**
	76–85	**2**	**1.3**
	Total	**153**	**100.0**
Marital Status	**Married**	**145**	**94.8**
	Single	**2**	**1.3**
	Divorced	**2**	**1.3**
	Widowed	**4**	**2.6**
	Total	**153**	**100.0**
Age at Menopause	**40–45**	**105**	**68.8**
	46-50	**41**	**26.8**
	51-55	**7**	**4.6**
	Total	**153**	**100.0**

Table 2 shows the distribution of age at menopause among the participants showed that the majority of women (68.6%) experienced menopause between 40 and 45 years. This was followed by 26.8% of participants who attained menopause between 46 and 50 years. A smaller proportion (4.6%) reported menopause between 51 and 55 years. Overall, these findings indicate that most women in the study experienced menopause at an earlier age range of 40–45 years.

Table 2. Severity of Urinary Incontinence Among the Postmenopausal women According to Incontinence Severity Index (ISI) (n = 153)

ISI	Frequency	Percent
None	**90**	**58**
Slight	**50**	**32**
Moderate	**11**	**7.2**
Severe	**1**	**0.7**
Very Severe	**1**	**0.7**
Total	**153**	**100**

Table 3 shows the association between demographic variables and urinary incontinence severity. There was no significant association between marital status and incontinence severity ($\chi^2 = 9.403$, $p = 0.668$). However, age was significantly associated with incontinence severity ($\chi^2 = 79.216$, $p < 0.001$), indicating that older postmenopausal women were more likely to experience higher severity of urinary incontinence.

Table 3. Association Between Demographic Variables and Incontinence Severity (n = 153)

Association Tested	Pearson Chi-Square (χ^2)	df	p-valvue
Marital Status × Incontinence Severity	**9.403[a]**	**12**	**0.668**
Age × Incontinence Severity	**79.216[a]**	**12**	**0.001**

DISCUSSION:

In this cross sectional we study determine the prevalence of urinary incontinence among postmenopausal women and found that urinary incontinence is highly prevalent (41.2%), with most cases being of mild severity. This finding indicates that urinary incontinence is a common yet often underrecognized condition in postmenopausal women and highlights the need for early identification and management to prevent progression and improve quality of life. This result is strongly supported by Bertuit et al., a systematic review and meta-analysis on urinary incontinence prevalence among women across African countries, which reported that urinary incontinence remains highly prevalent worldwide, with variation depending on

region and methodological differences [22]. The observed high proportion of mild cases suggests that many women may remain undiagnosed or delay seeking medical advice due to social stigma or the perception that urinary leakage is a normal part of aging. This underlines the importance of routine screening in postmenopausal women to ensure early detection and timely intervention. Early management strategies, including lifestyle modification and pelvic floor strengthening exercises, may play a crucial role in preventing progression to more severe forms of urinary incontinence and improving overall well-being.

Strengths of the Study

This study utilized the standardized Incontinence Severity Index (ISI), a validated tool that strengthened the reliability of urinary incontinence assessment. The relatively adequate sample size (n = 153) improved the precision of prevalence estimates. Additionally, the cross-sectional design helped identify associations between demographic factors and urinary incontinence and provided valuable baseline data among postmenopausal women.

Limitations of the Study

The cross-sectional design limits causal interpretation between associated factors and urinary incontinence. Self-reported responses may have introduced recall bias and underreporting due to social stigma. Important variables such as body mass index, parity, comorbidities, and lifestyle factors were not assessed. Furthermore, sampling from a single region may limit the generalizability of the findings.

Recommendations

Routine screening for urinary incontinence should be encouraged among postmenopausal women for early detection and management. Health education regarding pelvic floor exercises and lifestyle modification may help reduce symptom severity. Future studies should include multicenter samples, additional risk factors, and longitudinal designs to improve generalizability and explore causal relationships.

Conclusion:

The study conclude that age has a significant association with the severity of urinary incontinence, whereas marital status does not show a significant relationship. The study highlights the importance of early identification, patient education, and preventive strategies in managing urinary incontinence. Addressing this condition effectively can contribute to improving the overall quality of life of postmenopausal women.

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Informed Consent

Written informed consent was obtained from all participants before their inclusion in the study.

Conflict of Interest

No conflict of interest.

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Ethical Approval

The study was approved by an independent Institutional Ethical Review Board (IERB) at the Foundation of Indus University under Protocol Number: IERB–01/U/AHS-DPT/25-26/010

AUTHOR CONTRIBUTION:

AUTHOR	CONTRIBUTION
Tooba Mubarak	**Substantial Contribution to study design, analysis, and acquisition of data.** **Manuscript Writing.** **Has Given Final Approval of the version to be published.**
Khadija Usman	**Critical Review and Manuscript Writing.** **Has Given Final Approval of the version to be published**
Okasha Anjum	**Acquisition and interpretation of data.** **Has Given Final Approval of the version to be published.**

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